The effectiveness of competency-based education in equipping primary health care workers to manage chronic disease in Australian general practice settings

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ABSTRACT

Objective: To review the literature on the effectiveness of competency-based education (CBE) as a means of equipping the Australian general practice workforce to deliver optimal chronic disease outcomes to articulate policy options for the Australian context.

Methods: Systematic review of the literature (1991–2005) using a narrative approach followed by analysis of the findings using the actors/context/ processes/content framework of Buse et al.

Results: Few high-quality studies were identified. National policy options include incorporating clear statements about education and training, research and evaluation in any policy document targeting chronic disease; and provision of funding to enhance general practice teaching facilities and/or facilitate the development of supportive coordinating and administrative structures for training practices. Designers of CBE should consider five key questions: Are the educational objectives of the CBE clearly aligned with the chronic disease or workforce-related outcomes of interest? Is the design of the CBE sound? Have similar educational programs targeting the same outcomes been identified and every attempt made to maximise synergies between programs? Are the educational designers fully aware of and working within the existing complexity of the training environment? Are all involved in the program actively managing the process of change?

Conclusions: Policy options range from those relatively simple and achievable to more complex and difficult. The full report is available at http://www.anu.edu.au/aphcri/Domain/Workforce/final_25_glasgow.pdf.

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The increasing prevalence of chronic illness and comorbidity in Australia, combined with workforce shortages in general practice and primary health care settings,[1,2] presents significant challenges for Australia's health policymakers. Australian federal and state governments have made substantial commitments to tackling chronic disease through policies such as the 2005 National Chronic Disease Strategy, the 2006 Australian Better Health Initiative[3] and the National Action Plan on Mental Health.[4] But how can we move from these overarching national policies to the delivery of increasingly high-quality, safe, efficient chronic illness care in the face of workforce constraints? Education and training activities that more effectively equip the diminishing workforce to provide such high-quality care are essential components of any response.

Competency-based education (CBE) programs are educational programs focused on outcomes.[5] In this article, we consider CBE synonymous with competency-based training programs. Outcomes-orientated programs are considered best educational practice.

We summarise here the findings of our recent systematic literature review[6] of CBE and its role in equipping the general practice workforce to deliver optimal chronic disease care. Using the approach of Buse et al,[7] we formulate some policy options and propose five questions for developers of CBE programs to consider.

Methods

In our systematic review of CBE, we focused on nursing and medical members of the primary health care workforce and the general practice context. Complementary treatments were not considered.

Initial questions

The initial questions asked were as follows:

1. Could CBE:
   - improve consumer access to chronic disease care?
   - achieve better integration of chronic disease services and better multidisciplinary care?
   - achieve better management of chronic disease?
   - give greater focus on prevention and early intervention?
   - provide greater community support and involvement in health care? and
   - give greater professional satisfaction and teamwork?
2. What is known about funding of CBE?
3. What is known about the cost-effectiveness of CBE?
4. How could CBE be sustained?
5. What are the facilitators and barriers to the implementation of CBE?

Databases and search terms

We searched the Cochrane Library and Database of Abstracts of Reviews of Effectiveness, MEDLINE (Ovid and PubMed), CINAHL, ECONLIT, and the Informit Australian publications database. Snowballing techniques identified other literature and relevant websites and included searches in Google and Google Scholar. We also did limited hand searches of articles. Our search covered the period 1991–2005.

Search terms included the following: competencies, competence, competency-based education, competency-based training, primary health care, primary care, primary medical care, general practice, family medicine, chronic disease, chronic illness, chronic conditions, diabetes, asthma, chronic obstructive pulmonary disease (and other chronic diseases by name), comorbidity, workforce, recruitment, education and training, together with keywords in the initial questions such as multidisciplinary, integration and access.

Publications eligible for inclusion had to discuss interventions that included a substantial educational component consistent with CBE. The outcomes used to assess effectiveness were access to chronic disease care; integration and multidisciplinary care; chronic disease health outcomes; prevention and early interven-

tion; and enhanced professional satisfaction. We also looked for evidence regarding funding and cost-effectiveness.

Defining the final set of publications included in our review

Our search retrieved 365 articles. This set was classified by two independent assessors into article type: systematic review, review, editorial, report/opinion, original research or grey literature. Each article was also weighted for relevance on a four-point scale (low, moderate, high or very high), according to the lead author's global impression of its contribution to the themes, concepts and issues identified in the final article. An article was judged to be of very high relevance if it had a major focus on workforce and/or chronic disease and/or CBE relevant to general practice settings. An article was dropped if, on the basis of the title and abstract with or without the text of the article, no direct relevance to these themes in the general practice setting was evident. An article could also be dropped if there was some low-level relevance to these themes, but other articles already illustrated the point(s). This elimination process resulted in a final set of 174 articles, of which 61 were of high or very high relevance.

Results

Our findings are summarised in Box 1. There was little direct evidence that CBE interventions in general practice settings are effective in influencing the specified chronic disease-related outcome measures.

Discussion

Implications for policy and practice

Buse et al[7] identify four factors — actors, context, processes and content — that are useful in health policy research. We discuss each of these factors as they relate to the development of CBE for chronic disease, and potential options for policy to facilitate this end. Although these factors are discussed separately, it is essential to bear in mind the dynamic interactions between them.

Actors

The delivery of chronic disease care, and workforce training for this task, involves many organisations with overlapping roles and responsibilities. For some organisations, health service delivery and/or education are at the core of their charters, while for others the connections are more peripheral. Yet all act in ways that shape or affect policy.

Australian Government involvement in chronic disease care is primarily through the Department of Education, Employment and Workplace Relations, the Department of Health and Ageing and the Office for Aboriginal and Torres Strait Islander Health. State and territory departments involved include those for education and health. Many educational organisations also play a role — some funded by government, some by members or through private fees, and some by combinations of these. They operate across a learning continuum, from undergraduate through vocational training to continuing professional development. They include universities, colleges (eg, the Royal Australian College of General Practitioners, the Australian College of Rural and Remote Medicine and the Royal College of Nursing, Australia), Australian General Practice Training's regional training providers, postgraduate medical councils, and continuing professional development providers. Other organisations also have a direct interest in chronic disease care. These include the Australian Medical Association (AMA), chronic disease organisations (eg, the Australian Lung Foundation, Diabetes Australia), self-management groups, the pharmaceutical industry and private health insurers.

At a national level, one policy option might be a simple but prominent statement included in a relevant strategy (eg, the National Primary Health Care Strategy proposed by the Rudd Government[20]) that makes clear that education and training, together with evaluation and research, are essential to realising optimal health outcomes for people with chronic disease. This would give all actors an educational "flag" around which to rally.

Context

What can be said about the context in which the policy options will play out? The inherent complexity arising from the number of actors is compounded by the stress characterising the general practice setting. Educators are also clinicians, and increasing clinical demands are made on their time. Although CBE is often located in the workplace, the dominant small-business private model of Australian general practice has limited the ability to provide physical space for educational activities. All educational providers face budgetary difficulties paying educators to teach. General practitioners have competing demands outside any educational initiative. For example, a GP, confronted with new Medicare item numbers, continuing professional development requirements, accreditation, and business management complexity, may feel so pressured that he or she is unwilling to contribute to educational activities. The inherent complexity is further compounded by the needs of particular communities, including rural and remote communities, culturally and linguistically diverse groups, or Aboriginal or Torres Strait Islander peoples.

Policy options directed at lessening this stress include the provision of capital for training general practices to expand their capacity; remuneration packages for trainers that minimise financial penalties arising from the displacement of clinical activity; and supportive organisational structures to minimise any additional administrative impact of educational activities. With regard to the latter, the positive experience of the rural clinical schools program is informative.

Processes

Chronic disease and general practice/primary health care workforce shortages are high on Australian governments' policy agendas. Significant investments have been made to address workforce shortages (eg, increased places for medical and nursing students at universities) and chronic disease (eg, the 2005 National Chronic Disease Strategy and the 2006 Australian Better Health Initiative).

Considerable changes have also been made to the Medicare Benefits Schedule, extending rebates beyond the medical profession following the Productivity Commission's health workforce report.[1] These initiatives are service-delivery oriented.

A key challenge is to garner explicit policy support, within these and other frameworks, for a forward-looking chronic disease education and training agenda across disciplines, and at all stages of the educational continuum. To ensure the evidence base continues to develop, educational initiatives should be complemented with major and sustained investments in applied research and evaluation activities targeting the delivery, organisation and funding of high-quality chronic disease services.

1 Key findings of our review

SPECIFIED CHRONIC DISEASE OUTCOME

Improved access

- *Direct evidence of CBE effectiveness in the general practice/PHC setting:* no evidence found
- *Evidence of CBE in other settings:* improved post-abortion care in Nepal;[8] improved access to depression care in residential aged care setting[9]

Better integration and multidisciplinary care

- *Direct evidence of CBE effectiveness in the general practice/PHC setting:* no evidence found
- *Evidence of CBE in other settings:* improved teamwork in a pathology laboratory[10]
- *Comments:* there are few high-quality studies evaluating the effectiveness of interprofessional learning on health outcomes;[11] interprofessional learning (not necessarily CBE) can change knowledge, skills and attitudes of learners[12]

Better management of chronic disease

- *Direct evidence of CBE effectiveness in the general practice/PHC setting:* improved outcomes in diabetes care;[13,14] joint injection for people with osteoarthritis improved[15]

Greater focus on prevention and early intervention

- *Direct evidence of CBE effectiveness in the general practice/PHC setting:* no evidence found
- *Comments:* according to Thompson et al,[16] barriers to physicians providing such care include the following: (i) the health care system and its culture limit flexibility for physicians, and the intention to help alone is inadequate justification for change; (ii) time constraints and patient demand make a physician's job one of responding to complaints rather than initiating action; (iii) feedback from preventive care is negative or neutral (eg, the physician does not receive feedback regarding the late-stage breast cancer averted by promoting mammography); and (iv) adequate resources are not available

Greater professional satisfaction and teamwork

- *Direct evidence of CBE effectiveness in the general practice/PHC setting:* no evidence found

OTHER DOMAINS

Funding

- *Direct evidence of CBE effectiveness in the general practice/PHC setting:* no evidence found
- *Evidence of CBE in other settings:* employers were favourably disposed to CBE but it increased the net cost of apprentices[17]
- *Comments:* there is a question mark over whether the proliferation of units of competency in the setting of vocational education in Australia has provided a return on investment, and a suggestion that major rationalisation is required[18]

Cost-effectiveness

- *Direct evidence of CBE effectiveness in the general practice/PHC setting:* no evidence found
- *Comments:* Walker et al[19] provide a useful list of costs that need to be considered in CBE

Sustaining CBE

- *Direct evidence of CBE effectiveness in the general practice/PHC setting:* no evidence found
- *Evidence of CBE in other settings:* structured orientation of new workers in general practice settings, including a focus on chronic disease management and educational resources available for maintenance of professional standards; incorporating a specific focus on aspects of chronic disease management into the routine and required activities of relevant organisations

Barriers and facilitators

Barriers

- Inadequate numbers of individual patients with the condition of interest
- Complex environment, including multiple players with competing agendas
- Complex nature of multifaceted interventions
- Cost
- Determination of acceptable levels of performance for defined competencies
- Dynamic nature of knowledge
- Key participants are not engaged
- Lack of evidence supporting the effectiveness of CBE
- Patient factors (eg, socioeconomic status) may affect trainee performance
- Representativeness of competencies selected for assessment of the larger professional role
- Uncertainty about the best type of chronic disease model

Facilitators[5]

- Engaging faculty and other stakeholders in the program
- Making competency-based curriculum an integral part of the organisation's strategic plan
- Using accreditation requirements to facilitate change
- Administrative support for developing, managing and assessing the curriculum
- Assurance that the planning process is clearly linked to an assessment plan
- Development of a suite of assessment tools that incorporate observations taken
- Application in many situations including the actual workplace
- Keeping faculty close to the assessment process
- Designing a competency-based curricular review process

CBE = competency-based education. PHC = primary health care. ◆

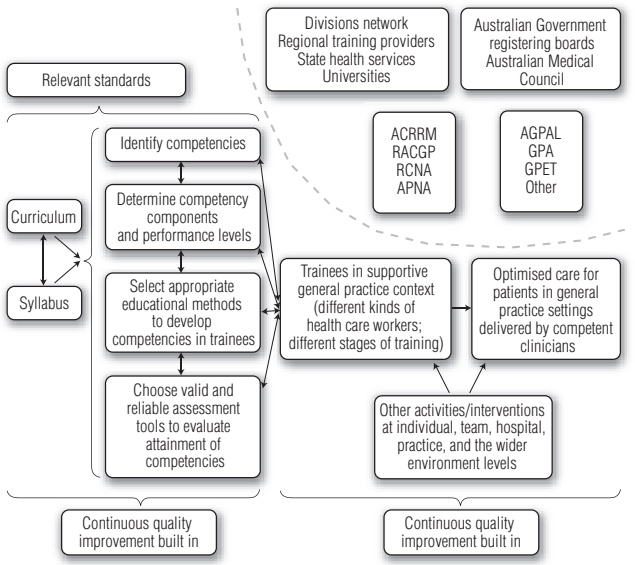
In mobilising support for these outcomes, care must be taken not to promote one chronic disease at the expense of another, or at the expense of education and research examining service delivery to people with coexistent chronic diseases.

As key sources of research funding, the National Health and Medical Research Council and the Australian Primary Health Care Research Institute would be actors. Implementation of particular CBE initiatives would be managed at a local level and would involve negotiations between relevant parties. The existing regional training provider network would be a logical place to start.

Content

At a high level, policy content involves attempts to align funding streams in different parts of the system to drive particular activities. For example, contracts with educational providers may require

2 Competency-based education and the general practice training environment*



ACRRM = Australian College of Rural and Remote Medicine.
AGPAL = Australian General Practice Accreditation Limited.
APNA = Australian Practice Nurses Association. GPA = General Practice Association. GPET = General Practice Education and Training.
RACGP = Royal Australian College of General Practitioners.
RCNA = Royal College of Nursing, Australia.
* The actors are listed above the dotted line. ◆

interdisciplinary learning for parts of chronic disease courses. Regulatory changes may be needed to allow role extension (eg, prescribing by nurses) or new role creation (eg, physician assistant models).

At an organisational level, policy options are concerned with the content of specific CBE programs and their implementation. Based on our systematic review, candidate programs could include:

- analysis and planning;
- behaviour modification and patient education;
- clinical audits;
- clinical practice guidelines and clinical pathways;
- communication skills;
- critical appraisal;
- cross-cultural issues;
- disease registers;
- generalism;
- informatics and computer knowledge;
- leadership;
- patient self-management;
- prescribing;
- prevention, screening and early intervention;
- quality improvement; and
- teamwork.

Interactions between the four factors

Box 2 summarises the interplay between the actors (above the dotted line), context (general practice), process (service delivery, education and evaluation considered together), content (funding and regulatory roles of some of the actors as well as the role of standards) and how these connect with the steps in developing a CBE program. It also illustrates the interplay between educational outcomes (the vertical stack of boxes relating to competencies) and health, program and/or organisational outcomes that are part of the environment.

Five considerations when developing chronic disease CBE in the Australian general practice setting

In considering the results of the systematic review and the interplay between actors, context, process and content, we propose five questions CBE program developers for Australian general practice should consider to maximise the likelihood of programs improving sustained chronic disease management and workforce outcomes.

1. Are the educational objectives of the CBE clearly aligned with the chronic disease or workforce-related outcomes of interest?

An overarching objective of policymakers, clinicians, and patients with diabetes might be to improve diabetic health outcomes. Sitting under this objective, the different groups might see diverse clusters of relevant intermediate objectives. Policymakers might focus on outcomes to do with access and delivery of care in the most efficient manner, and on population-level indicators. Clinicians might focus on clinical outcomes at individual patient level (eg, HbA_{1c} concentration) or process measures (eg, date of last foot check). Patients might be concerned about costs associated with care. If CBE designers considered these different perspectives when developing new courses, and explicitly related the program's educational objectives to them, it is more likely the program would be recognised as relevant by the many actors involved, thus increasing the likelihood of widespread support.

2. Is the design of the CBE sound?

CBE programs should be developed in accord with educational best practice. Issues include the degree to which the program is aligned with standards, supported by an appropriate curriculum, assessed through validated and reliable formative and summative instruments and underpinned by continuous quality improvement cycles.

3. Have similar educational programs across the system targeting the same outcomes been identified, and has every attempt been made to maximise synergies between programs?

Universities, regional training providers, colleges, Divisions of General Practice, various non-government organisations and private companies are actively developing educational resources and activities relevant to chronic disease. The educational workforce is under pressure. It is sensible to actively pursue partnerships and collaborations to minimise possible duplication of effort. There will be times when such arrangements are impossible because of intellectual property considerations.

4. Are the educational designers fully aware of and working within the existing complexity of the training environment?

The multiple organisations in the training environment have legitimate interests as stakeholders, but will also face different pressures because of their diverse organisational goals. For example, a CBE program designed to equip practice nurses with competencies to prescribe selected medications in the context of ongoing chronic disease management is likely to raise AMA

concerns about the roles and responsibilities of doctors and nurses. Optimal chronic disease management requires a fundamental change in health system orientation from acute, episodic and reactive care to proactive and continuing care. Any CBE program targeting chronic disease could be seen as part of a reform agenda and elicit vigorous responses.

5. Are all involved in the program (educators, health services, funders) actively managing the process of change?

Grol[21] outlines key stages in the change process and strategies required in each for improving health service quality. These factors are relevant in implementing CBE programs, which are complex interventions aimed at behavioural change.

Many questions need to be asked. Have the program and the rationale been discussed and opinion leaders engaged? Is there interest and commitment? Do the parties have insight? Is there a positive attitude to the proposal? Have the programs been tested and do the results suggest both acceptability and benefit? Are the appropriate supports in place, such as extra staff and equipment? Can it become routine practice? Do incentives support its continuation?

Through consideration of the five questions discussed above, designers of CBE programs can take account of the interests and conflicting perspectives of the many stakeholders in the system. In doing so, it is unlikely that all perspectives will be included and reconciled within any one program, but their careful consideration will increase the likelihood of developing CBE programs that are widely accepted and supported.

Conclusion

Although much has been written about CBE, direct evidence regarding its role in improving chronic disease management in general practice settings is limited. Evaluation of any new initiatives is therefore crucial. From a national policy perspective, incorporating clear statements about education and research in any policy document or strategy targeting chronic disease is one option. Other options include additional funding to enhance teaching facilities, purchase teacher time and/or facilitate the development of supportive organisational structures for training practices. All parties involved should consider the above five questions as part of the development of any new CBE program.

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Competing interests

None identified.

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